

What is claimed is:

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1. An apparatus for detecting a noise error of a signal comprising:

a high comparator that references a high voltage limit with the signal and generates an output;

a low comparator that references a low voltage limit with the signal and generates an output; and

a circuit that processes the high comparator output and the low comparator output, wherein the circuit generates an alarm if a noise error is detected.

2. The apparatus of claim 1, wherein the circuit comprises:

a high-to-low sub-circuit that detects a noise error during a rising signal transition; and

a low-to-high sub-circuit that detects a noise error during a falling signal transition.

3. The apparatus of claim 2, wherein the high-to-low sub-circuit and the low-to-high sub-circuit each comprise:

a plurality of flip-flop circuits;

a delay buffer; and

an XOR logic gate.

4. The apparatus of claim 1, wherein the high comparator and the low comparator each comprise a differential amplifier.

1 5. The apparatus of claim 1, wherein the high comparator and the low
2 comparator each comprise a sense amplifier.

1 6. The apparatus of claim 1, wherein the difference between the high voltage
2 limit and the low voltage limit is 300 mV.

92 Cont.
1 7. An apparatus for detecting a noise error of a signal comprising:
2 a high comparator that references a high voltage limit with the signal and
3 generates an output;
4 a low comparator that references a low voltage limit with the signal and
5 generates an output, wherein the difference between the high voltage limit and the
6 low voltage limit is 300 mV;
7 a high-to-low sub-circuit that detects a noise error during a rising signal
8 transition, wherein the high-to-low sub-circuit comprises,
9 a plurality of flip-flop circuits;
10 a delay buffer; and
11 an XOR logic gate;
12 a low-to-high sub-circuit that detects a noise error during a falling signal
13 transition, wherein the low-to-high sub-circuit comprises,
14 a plurality of flip-flop circuits;
15 a delay buffer; and
16 an XOR logic gate; and
17 wherein either sub-circuit generates an alarm if a noise error is detected

1 8. An apparatus for detecting a noise error of a signal comprising:
2 means for detecting a high voltage noise error;
3 means for detecting a low voltage noise error; and
4 means for activating an alarm signal upon detection of the high voltage or
5 the low voltage noise error.

1 9. A method for detecting a noise error of a signal comprising:
2 comparing a high signal voltage with a high voltage limit;
3 activating an alarm if the high signal voltage is less than the high voltage
4 limit;
5 comparing a low signal voltage with a low voltage limit; and
6 activating an alarm if the low signal voltage is greater than the low voltage
7 limit.

1 10. The method of claim 9, wherein the difference between the high voltage
2 limit and the low voltage limit is 300 mV.

1 11. The method of claim 9, wherein the low signal voltage is compared with
2 the low voltage limit by a low-to-high sub-circuit that detects the noise error
3 during a falling signal transition, wherein the low-to-high sub-circuit comprises,
4 a plurality of flip-flop circuits;
5 a delay buffer; and
6 an XOR logic gate.

1 12. The method of claim 9, wherein the high signal voltage is compared with
2 the high voltage limit by a high-to-low sub-circuit that detects the noise error
3 during a falling signal transition, wherein the low-to-high sub-circuit comprises,
4 a plurality of flip-flop circuits;
5 a delay buffer; and
6 an XOR logic gate.

1 13. A method for detecting a noise error of a signal comprising:
2 comparing a high signal voltage with a high voltage limit using a high-to-
3 low sub-circuit that detects the noise error during a falling signal transition,
4 wherein the low-to-high sub-circuit comprises,
5 a plurality of flip-flop circuits,
6 a delay buffer, and
7 an XOR logic gate;
8 activating an alarm if the high signal voltage is less than the high voltage
9 limit;
10 comparing a low signal voltage with a low voltage limit using a low-to-high
11 sub-circuit that detects the noise error during a falling signal transition, wherein
12 the low-to-high sub-circuit comprises,
13 a plurality of flip-flop circuits,
14 a delay buffer, and
15 an XOR logic gate; and
16 activating an alarm if the low signal voltage is greater than the low voltage
17 limit.